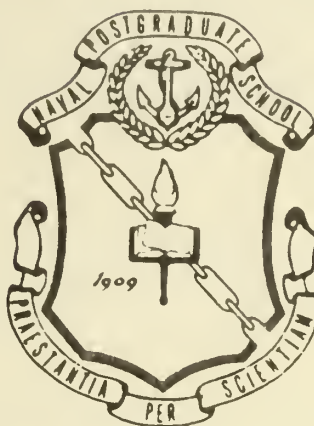


From D.D. Left margin (27 Feb)

Naval Postgraduate School



TECHNICAL NOTE

VM-14

THESIS9

Larry Frazier

November 1985

. sn ad

W. R. CHURCH COMPUTER CENTER

Overview - Using Thesis9

1. To get started, type *LINKSCR THESIS9* This sends a file called DRIVER9 SCRIPT to your A-disk. You will be using Xedit to change this example file to make it produce your own thesis.
2. Each chapter of your thesis should be in a separate file. Name the files CHAP19 SCRIPT, CHAP29 SCRIPT, etc. This way, the commands ".im chap19", ".im chap29", etc. in the DRIVER9 file will use your separate chapters to produce a single thesis. By convention, all files having to do with Thesis9 end in 9 (except the ABSTRACT file). Of course, you don't have to hold to this convention.
3. Xedit the DRIVER9 file. Change the example title to the title of your thesis; change the example author shown to your name, and so on. As you read the THESIS9 documentation, you'll see how to use the other commands in DRIVER9.
4. When you want to see what your thesis will look like, type

SCRIPT

You will see a menu where you should type DRIVER9 as the "file to be SCRIPTED". Type MEMO as the output device, then just press the PF10 (or 22) key. This creates a file called DRIVER9 MEMO. You can use Xedit to inspect this file. If your thesis is over 50 pages, type BROWSE DRIVER9 MEMO to look at it.

5. When you want a printed copy, type SCRIPT as shown above, type DRIVER9 as the file to be SCRIPTED, and then type PRINTER as the output device. When you press PF22 (or 10) you will be shown a menu that lets you specify whether you want UPPER case, or MIXED (upper/lower case) printout. Upper case is printed right away, upper/lower prints overnight. You'll see MYLAR mentioned on the PRINTER menu. Request mylar only for your *final* copy.

Thesis9 Version Oct85

14:56:48, October 23, 1985

3 Passes

Approved for public release; distribution is unlimited.

An Explanation
of
THESIS9 and Its Use

by

David D. Carlsen
Captain, United States Army
B.S., Brigham Young University, 1975

Submitted in partial fulfillment of the
requirements for the degree of

MASTER OF SCIENCE IN COMPUTER SCIENCE

from the

NAVAL POSTGRADUATE SCHOOL
December 1985

Author:

David D. Carlsen

Approved by:

N.F. Schneidewind, Thesis Advisor

R.W. Hamming, Second Reader

B.J. MacLennan, Chairman,
Department of Computer Science

Kneale T. Marshall,
Dean of Information and Policy Sciences

ABSTRACT

This example of a thesis explains how to effectively use the THESIS9 thesis preparation package. This example includes an index to improve its usefulness as documentation. However, an index is not part of accepted thesis format. It is intended that the THESIS9 commands produce all requirements of the NPS Thesis Manual dated 5/85. In addition they provide some features that simplify thesis preparation. All headings, the table of contents, figures, tables and references are automatically numbered or lettered as required. Paragraphs within sections and subsections are indented as required. The format is suitable for unclassified theses only.

TABLE OF CONTENTS

| | | |
|------|---|----|
| I. | HISTORY AND INTRODUCTION | 9 |
| A. | HISTORY | 9 |
| B. | INTRODUCTION TO THESIS9 | 10 |
| II. | SCRIPT AND THESIS9 | 12 |
| A. | USING SCRIPT | 12 |
| 1. | Seeing Your Results | 12 |
| 2. | Typing Your Thesis | 12 |
| B. | GETTING STARTED WITH THESIS9 | 13 |
| C. | KEEPING UP TO DATE WITH THESIS9 | 13 |
| D. | GENERAL SETUP OF THESIS9 FILES | 14 |
| E. | SCRIPT VARIABLES | 14 |
| III. | THESIS9 SPECIFICS | 17 |
| A. | GENERAL | 17 |
| B. | LINESPACING | 18 |
| C. | YOUR TITLE PAGE | 19 |
| 1. | DD 1473 | 19 |
| 2. | Distribution Statement | 19 |
| 3. | Title | 20 |
| 4. | Degree | 20 |
| 5. | Second Reader, Co-Advisor | 20 |
| 6. | Chairman of the Department | 21 |
| 7. | Dean | 21 |
| 8. | Classification of Your Thesis | 22 |
| D. | ABSTRACT | 22 |
| E. | DISCLAIMER | 22 |
| F. | ACKNOWLEDGEMENTS | 23 |
| G. | CHAPTERS | 23 |
| H. | REFERENCE COMMANDS | 24 |

| | | |
|-----|---|----|
| 1. | Refcom, Refprd, Refblk, Reftext | 24 |
| 2. | Ref, Refs, Reftext | 26 |
| 3. | References Without Numbers | 27 |
| I. | TABLE COMMANDS | 28 |
| 1. | Tabs Inside Tables and Figures | 29 |
| 2. | Placement of Tables and Figures | 30 |
| 3. | Maximum Length and Width of Tables | 30 |
| 4. | Two-line Table Titles | 32 |
| 5. | Tables Longer Than One Page | 32 |
| J. | FIGURE COMMANDS | 34 |
| K. | THE .LIST COMMAND | 36 |
| L. | SPECIAL CHARACTERS | 37 |
| M. | SYSPUB-BASED COMMANDS | 39 |
| 1. | The .footnote Command | 39 |
| 2. | The .boxon - .boxoff Commands | 40 |
| 3. | The .quote Command | 41 |
| N. | EQUATION COMMANDS | 41 |
| O. | APPENDICES | 43 |
| P. | BIBLIOGRAPHY COMMANDS | 43 |
| Q. | DISTRIBUTION LIST | 44 |
| R. | SPECIAL ABSTRACT | 44 |
| S. | HYPHENATION, LINESPACING, AND JUSTIFICATION | 44 |
| IV. | THESIS FORMATTING HINTS | 46 |
| A. | GENERAL | 46 |
| B. | WHAT TO EXPECT FROM THE REGISTRAR'S OFFICE | 46 |
| C. | FIXING SPECIFIC PROBLEMS | 46 |
| 1. | DISK IS READ ONLY | 47 |
| 2. | Advisor's Department Different From Chairman | 47 |
| 3. | Figures (or Tables) Not Working | 48 |
| 4. | You Didn't Close a | 48 |
| 5. | Hyphenated Last Words | 49 |
| 6. | Keeping Two Lines Together | 49 |

| | | |
|---|---|----|
| 7. | Semi-colons in a Title or Equation | 51 |
| 8. | Getting SAS Graphs Looking Right | 51 |
| 9. | Adding Blank Pages | 52 |
| 10. | Ellipsis Dots | 52 |
| 11. | Join Doesn't Work | 52 |
| 12. | If All Else Fails | 53 |
| 13. | Short Papers with Thesis9 | 54 |
| 14. | Removing Correct Words From List of Misspellings | 54 |
| D. | SHERPA PRINTOUT | 55 |
| E. | TABLE AND FIGURE SAMPLES | 60 |
| APPENDIX A: THESIS9 MACRO QUICK REFERENCE | | 67 |
| LIST OF REFERENCES | | 68 |
| BIBLIOGRAPHY | | 69 |
| INITIAL DISTRIBUTION LIST | | 70 |

LIST OF TABLES

| | | |
|----|---|----|
| 1. | THESIS "UNITS" AND CORRESPONDING COMMANDS | 17 |
| 2. | TRANSLATION CHARACTERS | 38 |
| 3. | NORMAL FULL PAGE TABLE | 64 |
| 4. | SIDEWAYS FULL PAGE TABLE | 66 |

LIST OF FIGURES

| | | |
|-----|---|----|
| 2.1 | Caution on Selection of Variables | 15 |
| 3.1 | How a Long Command Should Look | 23 |
| 3.2 | Endings Produced by Reference Commands | 26 |
| 3.3 | References Using the .ref Command | 27 |
| 3.4 | References Using the .refs Command | 27 |
| 3.5 | The Second Page of a Table | 33 |
| 3.6 | Using the .list Command | 36 |
| 3.7 | Commands of Interest From SYSPUB | 39 |
| 3.8 | Footnoting a Figure | 40 |
| 4.1 | Error Message From Forgotten Closures | 49 |
| 4.2 | If a Reference is Being Split Between Pages | 51 |
| 4.3 | Normal Full Page Figure | 61 |
| 4.4 | Sideways Full Page Figure | 63 |

I. HISTORY AND INTRODUCTION

You must have some familiarity with Script and Xedit before you use THESIS9. This documentation assumes that you have read VM-05 and part 1 of VM-06, available in the consulting office, IN-146. The SCRIPT consultant will be unable to provide effective assistance if you haven't read this documentation, and the first part of VM-06, thoroughly.

It is intended that THESIS9 adhere to current NPS thesis documentation standards. Notice that this sample thesis includes an index, to increase its usefulness as documentation. However, an index is not part of accepted thesis format.

Although the THESIS9 macros have been tested¹ extensively, there is still no guarantee that the format of a thesis processed by them will satisfy the Thesis Manual. It is your responsibility to have your rough draft checked out by the registrar's office before submitting a final draft. It is imperative that you do this early in your last quarter, so that there will be time to have your thesis typed, if it can't be properly processed by THESIS9.

A. HISTORY

THESIS9 was originally prepared in March 1982 by LCDR Vic Ackley using a macro by an unidentified author. It was modified, by Peter Jones in April 1982, and David Carlsen in March 1983. Larry Frazier, staff consultant for SCRIPT, refines and modifies THESIS9 from time to time, notifying

¹As you know, there are never any exhaustive tests of any computer program. There are always more bugs to be found. Hopefully, you'll find the bugs early in your experience and not one week before graduation. If you find anything that doesn't work, please be sure to contact Larry Frazier at x2671 or 0084P. We want to make THESIS9 as useful as possible.

those who use it via an on-line news system. Type LINKSCR NEWS for the latest changes and discoveries.

One thing to note in this history: No one person knows the reasoning behind every feature in THESIS9. No one has enforced strict documentation standards. Thus, the best assistance you can expect is of the form "In my experience, I have found THESIS9 to behave this way."

Please direct questions or comments to Larry Frazier, x2671, IN-104, or userid 0084P.

B. INTRODUCTION TO THESIS9

The Thesis9 macro set and documentation have been organized for ease of understanding into the following files:

- THESIS9 EXEC Sends a copy of the DRIVER9 file (necessary to use Thesis9) to your disk (use by typing LINKSCR THESIS9).
- T9 EXEC Prints the SCRIPT source for every file described on this page (includes material not needed by those not interested in modifying Thesis9 for their non-standard requirements.)
- THESIS9 SCRIPT The actual set of macros. You will be using a system copy this file. Don't copy and make changes to it unless you are certain you know SCRIPT well.
- DRIVER9 SCRIPT This is the file you will name in the SCRIPT command to get your thesis printed. It calls in several files, including THESIS9 and your individual chapters.
- HYPHEN9 SCRIPT This is a file that corrects the hyphenation of those few words that Script hyphenates incorrectly. You may want to modify it, adding words that SCRIPT hyphenates wrong in your thesis.

- ABSTR9 SCRIPT These files are called into (imbedded
- CHAP19 SCRIPT in) the original copy of DRIVER9 that
- CHAP29 SCRIPT you receive when you type LINKSCR
- CHAP39 SCRIPT THESIS9. DRIVER9 and THESIS9 put them
- CHAP49 SCRIPT together to form this example thesis.
- APPA9 SCRIPT
- BIBLIO9 SCRIPT
- REF9 SCRIPT
- DIST9 SCRIPT

You receive a copy of CHAP29 SCRIPT in the documentation so that you have something that not only tells you, but shows you how THESIS9 works. CHAP19, CHAP39, and CHAP49 are not included because they are bulky and contribute little to an understanding of Thesis9. You can examine them by typing

linkscr stay

and then

flist *9 * *

Thesis9 documentation is available in the consulting office, In-141. Type LINKSCR THESIS9 to get your copy of DRIVER9.

After you read this example thesis, look at the unscripted input files at the end of this tech note to see the THESIS9 and SCRIPT commands at work.

II. SCRIPT AND THESIS9

A. USING SCRIPT

1. Seeing Your Results

As described in [Ref. 1], the best way to see how your thesis is developing is to type

```
script driver9 (memo pas 3
```

This will give you a file called DRIVER9 MEMO containing a copy of your thesis very much as it would appear on paper.

To get a copy of your file on paper, type:

```
script driver9 (print pas 3
```

To see what a single chapter will look like (CHAP1 for example), place the command `.im thesis9` on line one of the file CHAP1 SCRIPT and then type

```
script chap1 (memo pas 3
```

Of course, you can simply type SCRIPT and follow the menu that appears on the screen, instead of typing out the commands shown above. See [Ref. 1] for more information on the general use of Script.

2. Typing Your Thesis

The best way to type in the text of your thesis is to use the **Power mode of Xedit**. Input mode is useful for typing in the material for a table or a figure when you want to lay out the exact placing of material on the page. See [Ref. 2] for more information on the use of Xedit. Incidentally, be sure not to routinely type the pound sign (above 3 on the keyboard) each time you enter power typing. You'll get an extra blank line each time you do.

B. GETTING STARTED WITH THESIS9

When you type `LINKSCR THESIS9`, a file called `DRIVER9 SCRIPT` is sent to your disk. It contains the commands needed to correctly format your title page. The commands are in the form used to produce the title page of this documentation, using name, degree, etc., appropriate to one of the people who contributed to this documentation. You will be editing the `DRIVER9` file to replace that name, degree, etc., with your own.

The `DRIVER9` file also calls in system copies of chapters which were formatted to produce this documentation. You can call your own chapters `CHAP19`, `CHAP29`, etc., if you like, and then Script will find your copies instead of the system copies. Or, you can give your files whatever name you choose, and find the spot in `DRIVER9` that says `.im chap19` etc. and change those lines to imbed your own files. Similarly, you will create a file called `ABSTRACT SCRIPT`, a file containing your references, and so forth. Then, when you type `SCRIPT DRIVER9 (MEMO PAS 3` you will get a file called `DRIVER9 MEMO` containing as much of your thesis as you have completed.

C. KEEPING UP TO DATE WITH THESIS9

From time to time, students tell the Script consultant of ways in which Thesis9 is inconvenient, incomplete, or inflexible. As time permits, the consultant modifies and adds to Thesis9 in response. Thesis9 documentation is updated from time to time to reflect these changes.

However, it is NOT necessary to get a new copy of the documentation each time a new issue comes out. The most useful documentation is that which you have read and underlined and annotated. Further, Thesis9 documentation is being consumed at a higher rate than Script (or any other) documentation, and if this continues, the print shop will no longer print it locally, and it will be necessary to have it

printed in Oakland, with a lead time of two months. The resulting staleness of information will do no one any good.

To stay up to date, type LINKSCR NEWS every month or so. In addition, there is a 6 or 8 page synopsis of what's new with Thesis9 available outside In-104, called What's New With Thesis9. A new issue of What's New is produced every 4 or 5 months.

D. GENERAL SETUP OF THESIS9 FILES

It is convenient and customary (though not required) to set up chapters and appendixes as separate files (e.g., "TC2 SCRIPT", for thesis chapter 2). Although the text of a reference can be placed within your text, some find it easier to put them in a separate file, also (see REF9 SCRIPT). This example thesis has been organized that way. Chapter three describes how to refer to these references in your thesis.

Paragraph indentation following head divisions (chapters, sections, etc.) is not automatic. Since current NPS thesis format requires these indentations, you must start each chapter, section, etc., with the `.para` command (immediately after the `.chapter` or `.section` or whatever).

E. SCRIPT VARIABLES

In your thesis you are likely to say things like "see figure 4.3". You are also likely to add or remove figures, so that what was figure 4.3 is now 4.4 or 4.2. Updating all the references to figures, tables, and sections is time-consuming and error-prone. If you look at the file called CHAP29 SCRIPT (at the end of this documentation), you will see that the reference to figure 2.1 is not a number, but `&caution`. The word "caution" appears directly after the `.figure` command word, and references to the figure give the same word preceded by an `&`. By referring to a figure by name, you leave it to Script to keep the numbers straight as you revise your thesis.

Be sure the variable name you give each table, figure, or reference is different than the variable name for any other table, figure, equation, or reference.

Figure 2.1 Caution on Selection of Variables.

Variable names can be up to 10 characters long. To avoid possible problems, don't use the names of THESIS9 or SYSPUB commands as variable names. Script commands are also dangerous. For example, using ll (as in "line length") as a variable is a known hazard: it resets the line length of your whole thesis to a ridiculous number. THESIS9 itself uses variables which you can not easily see. Generally they end with the two characters "_@", so don't use variable names with this ending. "Layout" is another variable you can't use.

SCRIPT differentiates between the name of a variable and the value of the variable this way: if you are referring to the name, simply use the name; if you are referring to the variable's value, then precede the name with an ampersand (&). For example, the value of the variable called "STAT" is referred to by "&STAT". You would normally use the name of the variable only within the command that begins a figure, table, or equation. Elsewhere, when referring to the table in your paper, precede the name with an ampersand.²

If you don't specify "(pas 3" when SCRIPTing the file, your output will show &varname (or whatever variable you have chosen) for those variables you use before the figure they refer to. The .figure (or .table or .equation) command assigns a value to the variable. When you specify (pas 3, Script reads through the entire file three times, assigning

²An ampersand is shifted "7" on the terminal in widest use at NPS.

values to all variables on the first pass, and then substituting them in on the second pass. This allows you to say something like "see figure &somevar below."

Notice that SCRIPT, always hoggish of cpu time, runs three times slower when you specify the (pas 3 option as described above. Actually, you needn't use (pas 3 most of the time: if you don't, you simply get &var instead of the number you expected. This can make a difference in line breaks in some cases, since the variable name is a little longer than the number value.

If you choose to end a sentence with a reference to a variable name, you must end the variable name with two periods in order to make one period print. Example: "as shown in figure &variable.." will print out "as shown in figure 2.2." To get a comma after a variable, type &variab., in your Script file.

III. THESIS9 SPECIFICS

A. GENERAL

TABLE 1
THESIS "UNITS" AND CORRESPONDING COMMANDS

| <u>Unit</u> | <u>Command</u> |
|-------------------|---|
| First-order Head | .chapter title |
| Second-order Head | .section title |
| Third-order Head | .subsect title |
| Fourth-order Head | .subsub title |
| Fifth-order Head | .fifthsub title |
| Appendix | .appendix title |
| Reference | .reftext variable body of reference .refend |
| Figure | .figure variable 'title' body of figure .figend |
| Table | .table variable 'title' body of table .tabend |
| Footnote | .footnote word body of footnote .footend |
| Equation | .equation variable 'equation' |

Table 1 shows commands that are used to format different blocks of text in your thesis. Wherever you see the word "title" in the table, you would type in the title of your chapter, section, figure, etc. Where you see the word "variable" you substitute a word of your choosing. Script variables are discussed in chapter 2. In this example thesis you can see that chapters, but NOT sections, start a

new page. Thesis9 handles this correctly, but some users of Thesis9 have systematically and incorrectly added extra commands to make their sections start on a new page.

Note also that thesis standards specify that a paragraph within a section must be indented more deeply than one within a chapter, and subsections are to be indented more deeply still. If you use the Thesis9 command `.para` to start each paragraph, this will be handled correctly.

Those items surrounded by single quotes (' ') in the table must be set off from the rest of the line. Normally you would use single quotes yourself. If your title or equation contains a single quote, you can use double quotes (" ") to surround the title or equation, or you can use slashes (/ /) or exclamation points (! !).

A peculiarity of Script that probably won't affect too many people: you can't use a number for a title. 1983, or 1946, or such like, would make perfectly reasonable titles. Can't be done in Thesis9. Also impossible: titles consisting of the word "on", "yes", or "begin". Of course, you can have titles with these words or numbers included as PART of the title. "On June 4" is an acceptable title.

B. LINESPACING

Unless you say otherwise, Thesis9 will print your thesis at eight lines per vertical inch. If you want to print your thesis at 6 lines per inch, put the command

```
.sr 6lpi = yes
```

BEFORE your `.im thesis9` command. The lineprinter will still print your thesis at eight lines per inch unless you change the EIGHT in the Script Menu to SIX. Realize that if you switch between eight and six lines per inch, page breaks will be different and figures, tables, and equations may not be placed where you expected them. If you have an extremely complex signature page (distribution code greater than one

AND: three authors, or two authors with multiple degrees), it may simply be impossible to fit all the lines on the page at six lines per inch. The titlepage will print on two pages, and this is okay with the registrar. Or, you could just print the title page at eight lines per inch and the rest of the paper at six lines per inch, in two separate runs.

C. YOUR TITLE PAGE

Quite a number of commands are used to gather information for the signature page (which is produced in your Driver file by the .titlepage command.)

1. DD 1473

Page one of your thesis is form DD 1473.

If your abstract is too long to fit into the seven lines in the box on the front of the form, put the command

.ldpage 3

in your DRIVER9 file, before the .titlepage command.

2. Distribution Statement

Thesis9 distribution statements correspond to requirements announced at the November 84 thesis briefing. .distno 1 is "approved for public release". If the distribution of your thesis won't be unlimited, use .distno with any one of 2 through 6, corresponding to distribution statements B through F on the sheet from the registrar's office. If you use anything but "1" (Unlimited Distribution) for .distno you must enter the reason on the following line with the .reason command. The reason, thus, must fit on one line (up to 230 characters). (Look up "three-line figures" in the index of this tech note to see how to get a long single line, for a long reason.) If you don't type in a reason, it will be "Proprietary Information".

The driver9 file contains the command .dodoff to input the DoD office required by all but .distno 1. Note that the entire DoD office must appear on the same line with the .dodoff command. Neither the reason nor the DoD office should be surrounded by quotes.

Distributions 2 through 5 require adding "via DTIC" etc. If your thesis is being distributed via any unit besides DTIC, use the .via command to put in that information, like this:

.via some other unit name and address

3. Title

The .title command centers a line of your title. Use the .title command no more than three times. It also prints the title in your special abstract.

4. Degree

Type in your NPS degree in upper/lower case. It will print all upper case, as required, on the title page, and upper/lower case, as required, on the special abstract. Don't type it in all caps.

5. Second Reader, Co-Advisor

If you want your title page to specify "second reader", put the name of your second reader in place of the example name the driver file comes with, in the command .seondre. If you prefer the phrase "Co-Advisor", REPLACE the .seondre command with a similar .coadvisor somename command, giving the name of your co-advisor. The advisor named with .advisor will be called Advisor, and the one named with .coadvisor will be called Co-Advisor. Both will be called Co-Advisor only if you say

.sr coadcoad = yes

Some departments do not want a line saying "Second Reader" or "Co-advisor" at all. To do away with this line, use the command


```
.sr secname = no
```

You can place the command anywhere between `.im thesis9` and `.titlepg` in your Driver9. It isn't even necessary to remove the `.seconde` command.

6. Chairman of the Department

Be sure to enter the name of the head of your department (or academic group) with the `.chairman` command, and the name of your department (or academic group) with the `.dept` command. If you find that the department name doesn't fit on a single line, remove the `.chairman` command and use the variable "dept1" to enter the first line describing that signature line, and "dept2" for the second line, as below.

```
.sr dept1 = Harriett Rigas, Chairman, Department of  
.sr dept2 = Electrical and Computer Engineering  
.dept Department of Electrical and Computer Engineering
```

Notice that it is still necessary to enter the full department name with the `.dept` command, as the full department name is used in the Special Abstract. Notice also that the word "Chairman" is supplied automatically when you use the command `.chairman`, while you must type it in when you use "dept1" and "dept2". I have it from the department secretary that the head of the ECE department finds the title "chairman" quite acceptable, and does not expect "chairperson".

7. Dean

The `.dean` command has always been used to enter which Dean it is that oversees your department. For simplicity's sake, that has been continued. Now that the name of the dean is also required, `.deanname` has been added for you to input the NAME of the dean overseeing your department. As of this writing, the longest entry for this line fits on one output line (60 characters).

8. Classification of Your Thesis

Use .class to specify the classification of your thesis; it will be "Unclassified" unless you specify otherwise. Thesis9 uses this information in producing the Special Abstract. Thesis9 is unsuitable for a Classified thesis.

D. ABSTRACT

Put your abstract in a file ABSTRACT SCRIPT. The first line of the file must be

```
.prelim Abstract
```

There must be no blank line before this command.

E. DISCLAIMER

Disclaimers will be more in use now, I am told. A student gave me a copy said to be the official statement desired if your thesis includes software listings. Check with your advisor to see whether you need a disclaimer. To get a disclaimer page, place the following command in your Driver file after the .im abstract command and before the .contents command.

```
.im disclai9
```

This is the disclaimer page you'll receive.

Thesis Disclaimer

The reader is cautioned that computer programs developed in this research may not have been exercised for all cases of interest. While every effort has been made, within the time available, to ensure that the programs are free of computational and logic errors, they cannot be considered validated. Any application of these programs without additional verification is at the risk of the user.

F. ACKNOWLEDGEMENTS

If you choose to use an acknowledgements page, put the text of your acknowledgement in a separate file, and imbed the file immediately before you imbed your first chapter. Similar to the abstract, the first line of the file must be

`.prelim Acknowledgements`

G. CHAPTERS

If the title of a chapter in your thesis is too long to fit onto one line, you can use the `.chap2` command. The command should look like the first part of figure 3.1, not the second.

A long command should look like this:

```
==== .chap2 var 'Line 1 of a Long Chapter Title' 'Line 2 of
the Long Chapter Title'
```

It should NOT look like this:

```
==== .chap2 var 'Line 1 of a Long Chap. Title' 'Line 2 of
==== the Long Chapter Title'
```

Figure 3.1 How a Long Command Should Look.

What's the difference? In the first part of the figure, the command is too long to fit onto one line on the Xedit screen, and has overflowed onto the next line. You can tell that it is all one line, because it covers over the `====` that indicates a new separate line in Xedit.

On your screen, the first incomplete portion of the line would be 73 characters long, not 54 as shown in this example. Now, don't YOU type in the `====` shown. That is the prefix area that you see when you use Xedit.

In the second part of the figure, the line beginning with "the Long" is a separate line, and Script will not read it as part of the `.chap2` command. You can tell it is a separate line because you can see the `====` which Xedit

shows at the beginning of each separate line. If your chap2, figure, or table command doesn't work right, this is the most probable cause.

The easiest way to get the command all on one line is to type in the second line of the title on the line following the first line of the title. Then make the first line of the title the current Xedit line. Then use the Xedit command J (for join) to join the two lines together. Be sure there is a space between the two apostrophes separating the two lines, and that you have four separate apostrophes, as shown in the example. Notice too that "chap2" is the command you use for any and all 2-line chapter titles, whether it be the first, second, or third chapter.

H. REFERENCE COMMANDS

There are two distinct sets of commands for producing references, described in the next two subsections. It isn't necessary to become familiar with both. The first set was developed first, but has some shortcomings. The second set requires fewer different commands, and provides "Refs." as well as "Ref."

When you refer to a source in your paper, thesis format [Ref. 3: p. 8] requires that a number be assigned to the reference, and the same number must appear in square brackets in your text. You may specify certain pages if you choose; if you do, you may put the page numbers in the list of references at the end of the thesis, or with the number within brackets in your text. If the source is referred to more than once, thesis format requires that the page number appear within brackets within your text.

1. Refcom, Refprd, Refblk, Reftext

There are two parts to a reference in this and the second set of reference commands: the number in brackets that appears in your text, and the body of the reference (which may be in a separate file at the end of the thesis,

or may be typed into your chapter right after the command that produces the number in brackets). Script automatically numbers the list of references and matches that number to the citation in text. How does it match them up? You choose a variable name³ (different from other variable names in your thesis) and use that name in the command that generates the square brackets in your text, and in the command that accompanies the reference itself in a separate file.

The command that accompanies the reference itself is .reftext. So, if the body of a reference was prefaced by .reftext jones82, thereafter whenever &jones82 appeared in the text, Script would replace it with the assigned reference number. Place the command .refend after each reference.

You can list your references in a separate file, arranged in the order in which you referred to them in your text; there's an example of such a file at the end of this manual. OR, you can put each reference surrounded by its .reftext - .refend, right in your text, after the .refcom, .refprd, or .refblk command. This way, if you delete or move a reference or a section of your thesis, you don't have to update the order of references in a separate file.

Among the commands for use in your text to create the square brackets and the reference number are three that come in a set. The three commands differ only in that one produces a blank after the closing square bracket, one a period, and one a comma.

Like every other Script (or Thesis9) command, these commands must start on a new line. Next is the variable name, preceded by an ampersand (&), and finally, the page numbers cited, if you mention them here. Anything on the

³Remember, two-letter variable names are liable to cause trouble.

| |
|--|
| <p>.refblk follows the final bracket with a BLANK</p> <p>.refprd follows the final bracket with a PERIOD</p> <p>.refcom follows the final bracket with a COMMA</p> |
|--|

Figure 3.2 Endings Produced by Reference Commands.

same line with the command will appear within the square brackets.

If you mention the page number in your reference, the reference number must be followed by a colon. To get a colon to immediately follow a variable, you have to "stick it on" with a period. If you just put the colon, without the period, the colon won't print. If you don't mention the page number, don't put in the period and the colon. Here's a typical usage of .refprd:

text of your paper, etc. as seen in

.refprd &somevar.: p. 43

.para Next paragraph of your paper, and so on

If the reference appears at the end of a sentence, and the reference refers only to that sentence, use .refprd without typing in a period to end the sentence. If the reference refers to the entire paragraph, place the .refblk command following the period that ends the sentence.

2. Ref, Refs, Reftext

Some people find .refcom, .refprd, and .refblk confusing. An alternative to the three commands is available, in which you use a single command, but include the comma or period as part of the command. See figure 3.3 for examples. Remember, if you cite a source more than once, the page number must appear within the square brackets in your printed thesis. If you use the .ref (or .refs, below) command, you must put the page number in quotes, as shown in the example. Be sure you put a space between the variable and the period or comma.

| Command | Result |
|---|-------------------|
| <code>.ref &var1 , 'p. 34'</code> | [Ref. 3 p. 34], |
| <code>.ref &var2 . 'page 58'</code> | [Ref. 4 page 58]. |
| <code>.ref &var3 'p. 817'</code> | [Ref. 5 p. 817] |

Figure 3.3 References Using the .ref Command.

Students may wish to refer to two references at once: to say something like

see [Refs. 8,9].

There is a slight variation of the above (.ref) command. It is simply .refs. See figure 3.4 for examples. Note that there may be a comma or hyphen, but no spaces, between the two variables. As in the .ref command above, anything placed within quotes at the end of the .refs (or .ref) command line will appear before the final square bracket.

| Command | Result |
|---|-------------------------|
| <code>.refs &v1,&vc , 'pp. 3, 76'</code> | [Refs. 3,4 pp. 3, 76], |
| <code>.refs &vj,&vq . 'pp. 17, 49'</code> | [Refs. 5,6 pp. 17, 49]. |
| <code>.refs &ve,&vr 'pp. 352, 59'</code> | [Refs. 7,8 pp. 352, 59] |

Figure 3.4 References Using the .refs Command.

Both .ref and .refs use the .reftext - .refend commands as described in the previous subsection.

3. References Without Numbers

A new command is available for theses using references without numbers. The main purpose for the reference commands is to keep track of reference numbers, and if you

aren't using reference numbers, you need very little help in this area. The new command is

`.refnonum`

Use it in place of `.lisref` in your driver file, and remove the `.refend` in the driver. Be sure you imbed your reference file AFTER the `.refnonum` command. (The reference file is imbedded before `.lisref`.) The `.refnonum` command puts an entry in the table of contents, and puts a title at the top of the first page of references.

I. TABLE COMMANDS

Within tables, formatting is automatically turned off. This means simply that Script will not gather up your text into paragraphs. (Variable substitution and character translation occurs unchanged.) It's assumed that you will be using tables (and figures) mainly for columns of information. Put `.fo yes` after the `.table` command to turn formatting on inside a table. It's all right, but not necessary, to turn formatting off again within the table.

Tables are automatically separated from text by two extra blank lines, and single spaced (you can turn double spacing back on inside the table with the `.ds` command). Tables are numbered with Roman numerals, but you can change that by placing the command `.tromnoff` (Tables ROMaN OFF) in your driver9 file before you imbed (call in) any of your chapters.

When you use the `.table` command, you specify a variable name⁴ and then the title of the table. So that Script can tell which is the variable name, and where the title begins, surround the title by quotes. (The characters ' " / or ! can be used in pairs, as described in section A of this chapter.) SYSPUB users take note: Thesis9 is completely

⁴Script variables are discussed in chapter two.

different from SYSPUB in the command format required for tables and figures. Here's how a Table command might look:

```
.table stats "Test 1's Results"  
    the contents of your table  
.tabend
```

The value of the variable⁵ "stats" will be set to the table number, and the table will be titled "Test 1's Results". Wherever in your thesis you want to refer to this table, you would type &stats and you would get the correct table number in place of the word "&stats". You would probably say something like "See Table &stats.." In the example, notice that the title is set off with double quotes, since there is a single quote (an apostrophe) within the title.

Tables will not be surrounded by a box unless you place the command .tabbox on in your DRIVER9 file before the place where you call in your chapters. This command need be issued once only for your whole thesis.

The registrar has requested that titles of tables be printed all capitals. Thesis9 has been modified to do that. The registrar is aware that a certain few disciplines have tables whose titles read more like a sentence, and thus properly should not be all caps. If this is the case, put the command

```
.sr uptable = no
```

in your Driver9 file, after your .im thesis9.

1. Tabs Inside Tables and Figures

When you have a box around a figure or table, column one is filled with the box, and the next two columns are left blank. Thus, if you want to use tabs to put things 7 columns to the right of the first print position in your table, the tab setting would be .tb 10, not .tb 7. Add

⁵Remember, two-letter variable names are liable to cause trouble.

three to each tab setting when the tab is to be used inside a table.

2. Placement of Tables and Figures

If there is room on the page for the table, Script will place it just where you have it in your input file. If there isn't enough room, Script will place it at the top of the next page. The space that was too small for the table will be filled with the text that comes after the table in your Script file.

The registrar requires that tables and figures never appear in the middle of a paragraph, no matter how long the paragraph or how short the table. Thesis9 is written so that if you do put a figure or table in the middle of a paragraph, the next line of text after the table or figure will start on a new line.

3. Maximum Length and Width of Tables

If you want your table to fill the entire page, the contents of the table must be 58 lines long. If you want to leave a blank space in which to paste in the contents of the table, use commands like these:

```
.table yourvariab 'Your title'
.fullblank
```

.fullblank knows whether this is a table or figure, whether it's sideways, whether it is being printed 6 or 8 lines per inch, whether a box is being used, and whether there is a one, two, or three line title. It issues .figend or .tabend as appropriate. It even allows you to squeeze in a slightly larger drawing by reducing the blank lines between box and title from two to one. To do that, say

```
.sr squeeze = yes
```

before that figure or table. Say .sr squeeze = no when you want to go back to two blank lines.

If the page following the table (or figure) is blank, decrease the size with `.fullblank -1`. If a line of text has squeezed in at the bottom of the page, increase the size: `.fullblank 2` (two more blank spaces), for example. There must be a space between `.fullblank` and any adjustment number.

If you are using Script to produce the contents of your table or figure, and the lines are longer than 54 characters, you will have to mount the table or figure sideways in your thesis. To get a page the right shape, place the command `.sideways` before each `.table` or `.figure` command. This will give you a text area 80 columns wide and 38 lines long. It comes from the printer right side up; instead of trimming the 11 X 14 inch sheet to a width of 8 1/2 inches, trim it so that it is 11 inches wide and 8 1/2 inches high. There are examples of full page tables and figures at the end of chapter four.

The title will wind up on the right-hand side of the page, but you must use a typewriter to add the page number at the bottom of the page. If you're using the laser printer, sideways tables and figures must be printed separately from the rest of the thesis. Therefore, if you are pasting in the material for your wide table, you might find it easier not to use `.sideways`. The Thesis manual does not require the title for a sideways table to be sideways itself. Thus, if you are pasting in your table material, produce the table (or figure) in the normal way, and just paste the table material in sideways.

You may see out-dated Script documentation saying something about `filltext` or `.revert`, in connection with `.sideways`. They are no longer needed.

4. Two-line Table Titles

On occasion you will be unable to fit the title of your table into sixty characters (including "Table XVIII" or whatever the number is). Here's the solution:

```
.table yourvar 'Line 1 of your title' 'Line 2 of title'  
  contents of your table  
.tabend
```

Notice that BOTH lines of your title are on the same line in your Script file. The easiest way to get this is to type the second line of the title on the line after the first line of the title. Then make the first line of the title your current line, and (on the xedit command line) type the command J (for join) to join the second line onto the end of the line containing the first line of the title. You can be sure everything is okay if the end of the long single line wraps around into the prefix area of your xedit screen. See section I, (on chapters) of this chapter, for an example of how a 2-line command should look. Of course, for tables you would say .table instead of .chap2 as shown in the example.

Be sure that you have a space between the single quote that ends the first line of the title and the quote that begins the second line of the title. Leaving out the variable, or any of the four quotes required, will cause an error with no helpful error messages.

5. Tables Longer Than One Page

Script the file once to see where the bottom of the page will be, and then use .tabend to end the table after one page. Then use commands something like Figure 3.5 to produce the second page.

This example assumes that you want your tables boxed. If you don't, remove the .boxon and .boxoff commands shown. This example assumes also that you have not turned off the default Roman numerals for tables. If you have, remove the &R' shown.

Note that there is no space between each semi-colon and each following command. Note also that the variable "tabnum" is not just an example. That is the exact variable that contains the current table number. In most Script commands, it doesn't matter whether you use upper or lower case. However, in the case of the command &R' above, the R must be capitalized, or you will get lower case Roman numerals for your table.

If your table is more than two pages long, you can use the given set of commands for each page of the table, or you can place the command `.cp` where you want a new page to begin, followed by the two `.ce` commands for the top of each page. If you use `.cp` to start each page, you would use `.boxoff`; `.fk off`; `.ds`; `.fo yes` just once, to end the last page of the table.

```
.ss;.fo no;.fk on;.boxon
.ce Table &R'&tabnum
.ce title of your table (cont'd.)
    contents of your table
.boxoff;.fk off;.ds;.fo yes
```

Figure 3.5 The Second Page of a Table.

The `.table` command does all this automatically for one-page tables. It also places the name and page of the table in the List of Tables. Of course you only want a single listing for one table, and the page number that should appear in the List is the first page of the table. The reason you have to end a table after a single page is that `.table - .tabend` won't give a "title (cont'd.)" at the top of subsequent pages. If you are having your tables boxed, `.table` is unable to close off the box at the bottom of any but the last page, either.

J. FIGURE COMMANDS

Figures are very much like tables in most of the details discussed above. This discussion of figures assumes that you have read all about tables, above.

First: what's the difference between figures and tables?

- The title of a figure is placed at the bottom of the figure, instead of at the top.
- "Figure" is written on the same line as the title.
- You get a box around the figure unless you specify `.figbox off`. This command need be issued once only for your whole thesis. Boxes are optional; the registrar's office has no preference one way or the other.
- Tables and figures are listed in separate lists.
- With figures, you can have three-line titles, as well as the two-line titles allowed for tables. All three lines of the three-line title must be specified on the same line in your Script file.

If your figures seem to be ignoring your `.sk` commands, change `.sk` to `.sp` or use `.fullblank` instead.

If you are specifying 3-line figure titles, you'll find that Xedit won't let you produce a line longer than 132 characters. Place the command

```
&IF &2 = SCRIPT LOAD (W 240
```

at the beginning of a file called PROFILE XEDIT. Some people have `&TRACE` at the beginning of their PROFILE XEDIT. It isn't needed, and it gets in the way of this command.

Xedit won't show you all of a long line created in this way. To see all of the line, issue the XEDIT command

```
verify 1 *
```

If you know your PROFILE XEDIT well enough to be sure there will be no irritating side effects, you might want to put that command in your PROFILE XEDIT as well.

When editing files with long lines, type

```
ri 55
```


to be able to edit the right-hand part of the line. You can type le 26 to move back to the left, ri 7 to move further to the right, and so forth. Type ri 0 to get back to normal.

Admittedly, this is all rather complicated. See Larry Frazier, In-104 for help.

Some people dislike the period placed automatically at the end of figure titles. If you don't want a period at the end of your figure title, place the command

```
.sr figperiod = no
```

in your driver9 file before you imbed your chapters.

Some departments prefer that figures be labelled "Fig. 3.2 Results of Test 1" instead of "Figure 3.2 Results of Test 1". To get this, put

```
.sr figabr = yes
```

in your Driver file before your chapters are imbedded. "figabr" stands for "figure abbreviation".

If you want to use SCRIPT to put boxes within a figure, you must use the "new" option of the .bx command. There are some things that can be done easily outside of a figure box, using .bx, which are completely impossible inside a figure box. See [Ref. 1] for a description of the .bx command.

You may want figures numbered like 2.1, 2.1a, 2.1b, 2.1c, instead of 2.1, 2.2, 2.3, 2.4. To get this, place the letter a (or b or c) at the end of your figure command. The number of the figure won't be increased, and the letter will be placed next to the number. YOU have to keep track of the letters; Thesis9 won't keep track of them for you. The command would look like this:

```
.figure var 'Title of Figure Connected w/ Previous' a  
.sp 12  
.figend
```

Be sure the letter is separated from the ' by a space.

K. THE .LIST COMMAND

When you have a series of items to discuss, you may want to present them as a list of points. You may want to number the points, or set off each point with an asterisk or the large black point (the bullet) you may have noticed in this documentation. To do this, use the .list command⁶ as shown in Figure 3.6. Used this way, the command will number the list items. To get bullets, type

```
.listbeg b
```

On upper-case printout, bullets will print as asterisks. They'll look okay on upper-lower printout. To get an asterisk or a dash (or any other character) type that character in place of the b. To get lower case letters of the alphabet, type the letter a in place of the b. To get capitals, type C. You can get these with parentheses or periods: type a) or a. or (a) or C) or (C) or l) or l. and so on. You get the idea. If you have specified anything besides .listbeg (.listbeg C for capitals, for instance), and later specify .listbeg, you will get what you previously specified (capitals, in this example).

```
.listbeg
first item, one or more lines of text
.list
second item
.list
third and last item
.listend
```

Figure 3.6 Using the .list Command.

⁶Those familiar with Syspub are cautioned that the thesis checker, prefers the format of the .list command to that of Syspub's .point. If you must have the multi-level capability of .point, talk to the thesis checker.

L. SPECIAL CHARACTERS

There are several characters (shown in Table 2) available on the line printer which can not be typed in at the keyboard. To get the character in the right-hand column, precede the character in the left column by ¢, the cent sign. Most of the symbols on the right don't print correctly in uppercase-only output.

Besides these special characters, there are two characters with special functions, the backslash (\) and the not sign (~).

Whenever you type the backslash, the printout will show a blank space. This can be extremely useful. Occasionally you want to be sure that Script will not insert an extra blank somewhere as it adds blanks to a line to make the right-hand margin even. You may also want to assure that Script won't start a new line at a certain point: you may want to keep all of "A. J. Foyt" on a single line. To do it, type a backslash instead of a blank space. It will print out on paper as a blank, but Script will never add another blank next to it or start a new line there. You'd type "A.\J.\Foyt".

The not sign (~) is set as the tab character. When it is typed, the character following is moved to the next tab position. See VM-06, the Script manual, and the Sherpa Technical Note for more information on Script tabs.

For unknown reasons hidden deep inside Script, it isn't possible to provide an escape character for the degree symbol (°). To get the degree symbol, type the left quote, which is at the left end of the top row on 3278 keyboards.

Those familiar with Script may be aware that (with plain Script) you can't get a curly brace (extreme right end of the second row from the bottom on a 3278 terminal) by simply typing that character. Thesis9 has changed that. In Thesis9, to get a '{' (or a '}'), just type that key.

TABLE 2
TRANSLATION CHARACTERS

| <u>Symbol</u> | <u>Translation</u> |
|---------------|---------------------|
| { | [|
| } |] |
| * | • |
| = | ≠ |
| > | ≥ |
| < | ≤ |
| - | ± |
| : | ; |
| ! | |
| \$ | & |
| Any digit | A superscript digit |
| (| ‘ |
|) | ’ |
| t | + |
| m | - |

Note that the final four translated characters shown above are superscript characters. Remember: these character translations occur only when the character in the left column of the table is preceded by the cent sign.

Note that only digits, right and left parentheses, plus, and minus can be printed superscript on the lineprinter. See chapter four to see how to print subscripts and superscripts on the laser printer. See [Ref. 1] to see how to get characters not shown in table 2.

M. SYSPUB-BASED COMMANDS

Experienced Script users may be familiar with SYSPUB. Some of the commands from SYSPUB which are likely to be useful in Thesis9 are shown in figure 3.7.

| | |
|----------|--------|
| footnote | boxon |
| footend | boxoff |
| quote | |

Figure 3.7 Commands of Interest From SYSPUB.

These commands are described in detail in the SYSPUB manual (available for reference in In-141). Since there is little else in SYSPUB of use to Thesis9 users, these commands will be briefly introduced here.

1. The .footnote Command

The easiest way to see how a footnote is done is to look at the file that produces chapter 2, printed out near the back of this tech note. The word which appears on the same line as the .footnote command will be followed by the correct sequential superscript number. That number will be visible in a MEMO file, but not in a LISTING file. The number won't be superscript if the printout is uppercase. On the lines following the .footnote command, place the text of the footnote (the material which is to be printed at the bottom of the page). On the line following the last of the text of the footnote, place the command .footend. To underscore the footnoted word, place the command .us on on the line before the .footnote command. Underscoring is automatically turned off by the .footnote command.

The title of a figure or table can be footnoted; the procedure is shown in Figure 3.8. Replace title with your figure title. th9fnun is not a sample name. That is the

exact variable name you must use in your figure (or table) title. Replace 22 with the size you want for your figure. (If it's a full-page blank figure, replace .sp 22 and .figend with .fullblank.) Place the text of your footnote where body of footnote appears. If the text of your footnote is too long to fit on the same page as your figure, it will be printed at the bottom of the following page, which the registrar accepts. You might want to adjust .fullblank (or the size of the figure) so that the footnote will be printed on the same page.

```
.footnum
.figure var 'title.&th9fnum'
.sp 22
.figend
.footbody
body of footnote
.footend
```

Figure 3.8 Footnoting a Figure.

Occasionally, a footnoted item will occur at that awkward spot where there is room for either the footnoted line on this page, OR the text of the footnote, but not both. Script will put the text of the footnote on this page, and the line referring to it will go to the next page. Generally the only thing you can do at that point is to rephrase your paragraph.

2. The .boxon - .boxoff Commands

The .boxon command begins a box the width of the page, and indents following text enough to fit into the box. End the box with .boxoff. If the box happens to come at the end of a page, it will be split between pages unless you put .fk on before the .boxon, and .fk off after the .boxoff. Figures are boxed unless you say (once is all that's needed) .figbox off. Tables won't be boxed unless you say .tabbox on.

3. The .quote Command

Put .quote begin at the beginning of a lengthy (more than two lines) quotation, and .quote end at the end. The quoted material will be indented two spaces from surrounding text and printed single space.

N. EQUATION COMMANDS

Equations are automatically assigned a number according to what chapter they are in. Giving the following command:

```
.equation einstein 'E = mc^2'
```

would produce this result:

$$E = mc^2 \qquad \qquad \qquad (\text{eqn 3.1})$$

Note that the equation must be enclosed in quotes. If there is a quote (an apostrophe: ') in the equation itself, you can surround the equation with pairs of " " or / / instead. In this equation, "einstein" was chosen as the variable name. Thus, if I wanted "See equation 3.1" in my scripted output, I would type "See equation &einstein". Script variables are described in more detail in Chapter 2.

In some disciplines, it is customary to print only the equation number, without "eqn"; to print (3.1) instead of (eqn 3.1) by the equation. If you want only the equation number, place the command

```
.sr .eqnon = no
```

in your driver file before you imbed your chapters.

You may have equations too long to fit on a single line. You don't want a fresh equation number for every line; also, you don't want the customary two blank lines after each line of the equation. The .equation command can specify how many blank lines should follow the first line of the equation. If you wanted just a single blank line after the first line

of your equation, followed by a second line of the equation, you would enter something like this:

```
.fo no
.equation polyn 1 '(x + y)^5 = x^5 + 5x^4y + 10x^3y^2
.il 2;+ 10x^2y^3 + 5xy^4 + y^5
.fo yes
```

which would give the following result:

$$(x + y)^5 = x^5 + 5x^4y + 10x^3y^2 + 10x^2y^3 + 5xy^4 + y^5 \quad (\text{eqn 3.2})$$

The digit '1' in the .equation command above specifies that one blank line is to follow the first line of the equation. You might want to put 0 or 2 there instead.

Equations will not always wind up where you want them. If your equation happens to come at the bottom of the page, it will be shifted to the next page if there aren't 7 lines left in the text area of the page. This leaves room for 2 or 3 lines of text - the 2 or 3 lines of text that follow the equation. This is okay if you refer to your equation with "as seen in equation &somevar.." However, if you say "as seen in:" and are counting on the equation being right where you placed it, your thesis won't look right.

There are two solutions. If you put .br on the line before the .equation command, no text will be allowed at the bottom of the page where the equation wouldn't fit. This may leave an amount of space at the bottom of the page which will be unacceptable to the registrar's office. The other solution is to say

```
.sr eqfloat = no
```

before your equation. This will let the equation squeeze into four lines instead of seven at the bottom of the page. It will also keep the text that follows the equation (in

your SCRIPT file) from preceding the equation (in the output). And if you have a figure that precedes the equation, and there isn't room for the figure on the current page, the figure will not bulldoze your equations onto the following page.

O. APPENDICES

The appendix command puts an entry in the Table of Contents each time it's called, and centers the title you give with the command (just like the chapter command). The command doesn't automatically turn off formatting or turn on single spacing. If you are putting a program listing in your appendix, you might want to put .fo no and .ss after the .appendix command. Use .fo yes where you want things formatted into paragraphs again, and .ds to start double spacing again. A sample appendix appears at the end of this manual.

If you are going to put program listings in your appendix, the printed page will have to be 11 inches wide and 8 1/2 inches high. To do this, place the command

```
.sr appnside = yes
```

before you imbed your appendix(es). Put the command .revert after the last sideways appendix.

P. BIBLIOGRAPHY COMMANDS

If you want a bibliography, the .lisbib command produces the header. After that command, imbed your file containing your bibliography. You must format the bibliography properly, using .us to do your underscoring. You must turn on formatting with .fo on at the beginning of your bibliography, and turn it off with .fo off at the end. Put .sk between each bibliographic entry. The .bibend required at the end of the bibliography file is placed for you in the Driver9 file, so don't put an additional one in your bibliography.

Q. DISTRIBUTION LIST

The `.lisdis` command produces the header for your distribution list. After that command, imbed your file containing your distribution list. Your entries will be single spaced; Script doesn't number them for you, so you'll have to do that yourself.

You must include a `.sk` to get the required one line between entries. The entries won't be formatted. This means that each line will start and end just as it does in your input file. Script won't gather your text up into paragraphs. Place a tab marker (the "not sign" or uppercase 6) at the end of the first line of each entry, followed by the number of copies to be sent. See the sample distribution list at the end of this manual.

R. SPECIAL ABSTRACT

The first line of your abstract file must be:

```
.prelim Abstract
```

The text of your abstract must begin on line 2 of the file.

If you'd like to be able to give your abstract a name ending in 9 (or any other name), put the name after the `.special` command:

```
.special name9
```

where "name9" is the name of the file containing your abstract. If you don't specify a name, your abstract must be in a file called ABSTRACT SCRIPT.

S. HYPHENATION, LINE SPACING, AND JUSTIFICATION

If you don't want Script to hyphenate any words in your thesis at all, type `.hymode off` before you imbed your chapters.

Similarly, if you don't like your right margin squared (you don't want Script to insert additional spaces in the line as needed to make every line exactly 60 characters

long), put in the command `.jumode off`. "Ju" stands for "justification", the printers' term for lining up lines of text vertically.

Finally, the `.limode` command is used to set the line-spacing. Chapters, sections, etc. reset linespacing to current `.limode` setting. About the only place you're likely to use it is if your abstract is too long to fit on one page in the special abstract. To print the special abstract single spaced, give the command `.limode 0` before the `.special` command in your driver file.

IV. THESIS FORMATTING HINTS

A. GENERAL

This chapter discusses specific thesis problems and general topics not covered elsewhere in Thesis9 documentation.

B. WHAT TO EXPECT FROM THE REGISTRAR'S OFFICE

Have your rough draft signed by all required people except for the dean. Next, take it to the registrar's office; you will see the thesis processor. These points in particular will be checked:

- The last word of a paragraph or a page mustn't be hyphenated.
- Capitalize Figure when you say "as seen in Figure 3.2".
- Single lines of text are not allowed before or after a figure or table. Similarly for the top and bottom of pages: if your paragraph, chapter, section, etc., ends at the top of a page, there must be two lines of text, or none at all, not just one. Zero lines of text is just fine. You don't have to try to fit in two lines of text.
- References in numerical order according to the order that they appear in the thesis. The one who checks your thesis will look for proper format in the references and for completeness of references.

After your thesis is checked, you will receive the necessary forms to complete your thesis. Don't forget that you will need a special abstract (discussed in chapter 3) to turn in with the final copy of your thesis.

It's not a bad idea to take a rough draft up for a quick review before you spend a lot of time doing something wrong.

C. FIXING SPECIFIC PROBLEMS

1. DISK IS READ ONLY

When you are starting out with Thesis9, you may run into a perplexing problem. You type XEDIT CHAP19 SCRIPT, and instead of getting a new empty file, you get a file with writing in it already. If you try to erase it and type in

your own material, or simply FILE out of this file, you get a message saying B DISK IS READ ONLY.

This is what has happened. When you Script something, you are connected to the disk where Script lives. Located there are files called CHAP19 SCRIPT, etc. Xedit looks first on your A-disk for the file you specify, then on any other disks you're connected to. If it finds the file-name you specified on the B-disk, it will edit that file.

What to do? You can just be sure you create any new files before you Script something. Or you can I CMS before you create a new file. Or you can type XEDIT CHAP19 SCRIPT A to specify that you want the file to be on your A-disk. Of course, once you've created the file, Xedit will always find the file on your A-disk, not a file with the same name on any other disk.

2. Advisor's Department Different From Chairman

If your thesis advisor belongs to a different department than your department chairman, there's an easy solution. As it happens, the signature page mentions only the department of the chairman, and the special abstract mentions only the department of your advisor. Therefore, to get the advisor's department to be different from that of the chairman, simply reissue the .dept command before .special with the department of your advisor. This second use of .dept is needed only if your advisor's department is different from your chairman's.

3. Figures (or Tables) Not Working

As explained in chapter 3, .sp 60 is the command to give a blank figure or table. The exact number to use depends on the number of lines in the title, whether there's a box around the figure or table, and whether the figure (or table) is followed by text or by another figure (or table). The .fullblank command takes all these conditions into consideration. Even it may require some fine tuning. Just remember:

- Whenever a table or figure is extending onto the next page, reduce the number in the .sp command or put a -1 (or -2) after the .fullblank command.
- If there is unwanted text at the bottom of the page, below the figure or table, increase the number in the .sp command (or put a 1 or 2 after the .fullblank command).

It is sometimes necessary to increase (or decrease) the number quite a bit. Another possibility: you can insert a blank line or two outside the box of your figure or table.

```
.sr skadj = 1
```

will ADJust the SKip (increase it) by one. You probably won't want to increase it by more than two or three; the registrar probably wouldn't approve. Use this with tables and figures that don't use .fullblank.

4. You Didn't Close a . . .

If you forget to end a figure, table, or footnote, thesis9 will throw an error message like Figure 4.1 onto the screen, giving the line number of the chapter, section, subsection, subsubsection, fifthsub, paragraph, figure, table, or footnote which was called before a preceding figure, table or footnote was closed. Thesis9 will not die at that point, but go on to Script the rest of the thesis. It won't try to end the figure, table, or footnote. To find the problem, go to the line number of the file mentioned in the error message, and start searching upward from there. If the line number is the beginning of a chapter, search upward from the end of the previous chapter.

You didn't close a figure, or a table, or a footnote. Check before the line number given for the chapter shown in this message. If the line number is the beginning of a chapter, check the previous chapter.

Figure 4.1 Error Message From Forgotten Closures.

This means, incidentally, that you can't use any of the above commands inside a figure, table, or footnote. If you have a paragraph inside a footnote, use .para instead of .pp.

5. Hyphenated Last Words

Script may hyphenate the last word in a paragraph, or on the page. To correct this, use the editor to place the hyphenated word on a line by itself, and place the command .hy off on the line before it. It's turned off automatically by the next .para command. It would look like this:

```
.hy off
offendingword.
```

Remember to look at your thesis again after you make this change, because it could create other hyphenation problems, since forcing that word onto the next line could force other words onto following lines as well. Remember, you can check the effect of changes like this using SCRIPT DRIVER9 (MEMO PAS 3

6. Keeping Two Lines Together

Keeping lines of text together is a little harder to deal with than hyphenation. Figure 4.2 gives an example of the problem and its solution. All that's necessary is that ,cc on fall somewhere among the words in the first of the lines to be held together, and that ,cc off fall somewhere among the words of the last of the (two or more) lines to be held together. You can just put ,cc on before the first line to be held together, and ,cc off after the last line to be held together.

Notice that these commands begin with a comma, instead of a period. In Thesis9, comma is set as the no-break control word indicator. This means that if you want a command that normally causes a break to have its

This is the first
line of text that must not be split from
the next line of text. The solution
isn't really very difficult.

Add two Script commands, like this:

This is the first
,cc on
line of text that must not be split from
the next line of text. The solution
,cc off
isn't really very difficult.

Figure 4.2 Keeping Lines of Text Together.

usual effect but cause no break, use the command with a comma instead of a period. The .cc command creates a break (words stop gathering up into a paragraph and start on a new line at that point), and ,cc doesn't.

If your figure or table is of such a length that exactly one line of text fits on the page with it, insert another blank line somewhere inside the figure or type .sr skadj = 1 to increase by one the number of blank lines after the title of the figure.

If an unusually long reference happens to fall at the bottom of a page, it may be split between pages. To correct this, adjust the reference BEFORE the one which is being split, so that it looks like Figure 4.3.

NOTICE that the .sk 6 command is inserted just BEFORE the .refend of the reference immediately BEFORE the one which is being split. Examine this carefully. It is amazingly easy to get this correction wrong.

```
.reftext
body of your reference
.sk 6
.refend
```

Figure 4.3 If a Reference is Being Split Between Pages.

7. Semi-colons in a Title or Equation

You may have found that putting a ; (semi-colon) in a title or equation doesn't work. To Script, the semi-colon means "end this command" wherever it occurs on a command line. To get around this, put a single quote ' right after the period that begins the command, as follows:

```
.'chapter You May Need a Semi-colon; You May Not
```

This is necessary only when you need a semi-colon on a line that begins with a Script command.

8. Getting SAS Graphs Looking Right

SAS graphs are produced with 11 or 12 blanks in front of each line. This makes the graph stick out of the right edge of figures and tables. Perhaps the easiest way to take care of this is to use the XEDIT command

```
:123 shift left 11 18
```

Replace 123 above with the beginning line number of the SAS graph in your Script file. (You can find out what the line number is by typing number on on your Xedit command line.) 11 above is the number of blank spaces preceding each line, and 18 is the number of lines to be shifted to the left. Any characters (not just blanks) in the first 11 columns are permanently lost, so watch what you are doing.

9. Adding Blank Pages

Occasionally you may want to reserve several pages for material not produced by Script. It would be possible to reserve 10 pages by issuing the .pa command 10 times, but this would cause 10 pages with nothing on them but the page number. If you intend to type the page number on the pages which are being produced outside of Script, this would be a waste of paper. You can avoid this waste by typing simply

```
.pa +10
```

If typed at the end of page 32, the following page will be numbered 43. Of course you can specify any number in place of 10. Remember the plus sign.

10. Ellipsis Dots

If you use a quote and do not use the entire sentence, the number of dots inserted (to indicate material left out) does make a difference. If you leave material out of the middle of the sentence, there should be three dots between parts of the sentence. If the dots appear at the beginning of your quote, indicate the missing material with three dots. If the dots appear at the end of the quote, indicate the missing material with four dots. If this point isn't clear, ask at the registrar's office.

11. Join Doesn't Work

If you changed the filetype of a file from something else to SCRIPT, you may discover that you can't use the Xedit JOIN command to make a line longer than 80 characters. Issue the Xedit command

```
lrecl *
```

to correct the situation. If you also issue the command

```
recf v
```

you'll find that the file takes up less space on your A-disk.

12. If All Else Fails

You may find that there is some minor item you simply can't get SCRIPT to produce, and there is no time to see the Script consultant. You can produce an output file from SCRIPT that you can then edit, making the changes "by hand". Type

```
script filename (disk pas 3
```

This will give you a file called FILENAME LISTING on your A disk. When you edit this file, be sure you don't reduce or increase the number of lines on a page - that would throw off the appearance of the rest of the thesis. So that changes you make will not be changed to uppercase, place the command

```
&IF &2 = LISTING SET CASE MIXED
```

in a file called PROFILE XEDIT. (Or you can simply type CASE M on the Xedit command line when you edit the file.) Then enter the following:

```
SPOOL PRINTER CONT FORM 0999  
PRINT fname LISTING  
SP PR CLOSE
```

That will give you an upper and lower case printout (8 lines per inch) with the changes included. Replace 0999 above with 1010 for mylar. Be sure to notify the computer operator if you are expecting mylar output.

Notice that changes made to the LISTING file will not affect your SCRIPT files. Next time you Script the same file with the DISK option, the LISTING file you edited will be replaced, and the changes you made when you edited the LISTING file will be lost. To prevent this, use the RENAME

command to change the name of the file (see tech note VM-01 on the RENAME command.)

If you must add or remove a line in a listing file, pay close attention to the characters which appear in column one. These characters are instructions to the printer. + says to reverse-line-feed before printing the line where the + appears. It's used to overprint, primarily for bold and underscore, but also for other situations as well. 0 means "advance one line before printing the line where the 0 appears". In other words, double space. - (the minus sign) means advance two lines, i.e., triple space. 1 means advance to the next page.

13. Short Papers with Thesis9

Some people are using Thesis9 for papers considerably shorter than a thesis. This has worked out well, except that if there is no .chapter command, figures are numbered 0.1, 0.2, etc. A paper of 10 or 12 pages may have three or four sections, and it might be appropriate to have figure numbers reflect the section they are in, as those in a thesis reflect their chapter. To accomplish this, place the following commands after each .section command.

```
.sr chnum = 3
.sr fignum = 0
```

This sets the first part of the figure number to the current section number, and resets the second part of the figure number.

14. Removing Correct Words From List of Misspellings

Often you use the spelling checker⁷ more than once on your thesis, and it can be tedious searching through the abbreviations, technical terms, and other legitimate words which Script has been unable to find in its dictionary. Now

⁷The spelling checker is described in VM-06, Script User's Guide.

it is fairly easy to make Script flag those words only once.

The procedure is this:

- Type RECORD ON to save the list of words not verified, and then run the spell checker on your report, being sure to send Script output to MEMO, DISK, or PRINTER.
- As soon as the entire list of words has come to your screen, type RECORD OFF. You will be asked to specify a filename for the list of words. Give it a filename like MYDICT that will tell you what it is, and a file-type of SCRIPT. In response to the next prompt on the screen, type X to indicate that you want to Xedit the file.
- Type save misspell temp to save a copy of the file with the genuine misspellings. Then look through the file, line by line, and delete the lines containing misspellings.
- Make the start of the file the current line and type fixspell. Several messages will appear on the screen, and then all the correct words, that you've left in the file, will have .du add placed in front of them, like this:

.du add techword

- Type FILE to exit the file, and then (assuming you named it MYDICT) put .im mydict at the beginning of your thesis or report.

Fixspell is a rather elaborate homemade command, and requires that you follow the above instructions closely. This command was designed for Thesis9, but it will work with any files with a 9 in the filename. It won't work if you have logged off (or issued IPL CMS or released the Script disk) since you Scripted anything. Report any problems to Larry Frazier In-104 x2671.

D. SHERPA PRINTOUT

You may be asked by your thesis advisor to get your thesis printed on the Sherpa laser printer. The print quality is higher, and Greek characters and subscripting are available. This is current Sherpa policy:

Students may print short files on the Sherpa without special permission. To print a thesis on the laser printer, a student must obtain written permission (on any paper; no special form required) from his or her thesis advisor, and submit it to Ed Donnellan, In-109,

Manager, Computer Operations. If this policy results in excessive load on the Sherpa printer, further restrictions will be necessary.

Read "SHERPA Laser Printer" available in the consulting office, to see how to use the laser printer. In addition, there are a few special considerations for the printing of theses on the Sherpa.

If you haven't used the command `.sr 6lpi = yes` to print your thesis at 6 lines per inch, be sure to specify the Sherpa option

lpi 8.0

when printing your file, since Sherpa prints six lines per inch unless you specify otherwise. This option is specified on the Sherpa screen (not the Script screen) of the Script command - the screen you see after you specify SHERPA on the second line of the Script command's first screen.

Other options on the Sherpa screen: at the top of the screen, where it says Proportional Printing, replace the default (yes) with NO. Use proportional spacing only if you need Greek characters or subscripts in your thesis (see below).

I have yet to see a Sherpa thesis in which the registrar has complained about the top margin. Some students, however, prefer to move the printout a little higher on the page. To reduce the default top margin of 0.7 inches, type

tm 0.6

in the _ _ _ _ _ area of the SHERPA screen.

Any sideways figures and tables must be printed separately from the rest of your thesis. You would print out your entire thesis, and then reprint the sideways pages as follows. Type the Script option (in the _ _ _ _ _ area near the bottom of the Script screen)

FROM=22 ONLY FROM=35 TO=37

to produce only page 22 and pages 35-37 (or whatever page(s) contain sideways tables and figures. There is room on the menu itself, above the _ _ _ _ area, for one range of pages. (See [Ref. 1] for a more detailed explanation of producing certain pages of output.) If a sizeable portion of your paper is sideways, don't waste paper printing the sideways pages at the same time as the rest of the paper. Use FROM= to print just the regular pages in a vertical format.

Besides the above Script option, you must adjust one of the defaults shown on the Sherpa screen. Change Orientation from North (the default) to West, to turn the printout sideways on the page. You will have to type the page number onto the final printout yourself, as with lineprinter output. If you should need to adjust the left or top margins on a page printed with Orientation West, hold the page so the print is right side up for you. The left margin is to the left: the left edge of the page is 8 1/2 inches long when you print with Orientation West.

On your final printing, you would probably want to change Sherpa options DUPLEX to NO (to keep it from printing on both sides of the page), and STAPLE to NO (to be sure your output will not be stapled).

Treat the laser printer the way you treat mylar: for final output only. Use MEMO files and the lineprinter to iron out details of the appearance of your thesis. In addition, if you fail to follow all the instructions given here, your printout will be useless. The Sherpa is not a heavy duty printer designed for 24 hour a day, 7 day a week use like the lineprinter. It fails more often than the lineprinter, and excess printing resulting from ill-informed usage hastens the failure that may hit you at just the wrong time.

If (and only if) you need Greek characters or subscripts in your thesis, place the commands

```
.im sherpa font norm prestigepica
```

.im txgreek

mentioned in the Sherpa technical memo before the .im thesis9 command in your DRIVER9 file. (Norm is just an example; you can choose any word you like.) With these commands, line breaks and page breaks will be nearly the same as on a lineprinter. If there are quite a few Greek characters on one line, you may get noticeably more characters on a line than with lineprinter output.

The txgreek file allows you to get a greek character by typing something like &omega. At the time of this writing, this is still under development, and this works only within text, within a paragraph. Further work will make these characters conveniently available within equations and figures. The Sherpa tech memo describes a less convenient method, using .bd or .us, which is now the only way to get special characters outside of paragraphs. With thesis9, couple .bi with the technique described in the Sherpa memo to get special characters. In general, expect to have to do some experimentation in working with special characters. Allow time for trial and error.

To get any character superscripted, simply precede the character with &S' To subscript something, type &s' before the character(s). Note that Capital S gives SUPERscripts, lower case s gives subscripts. This stays in effect until the next space or period. Thus, to get a right parenthesis immediately after a superscripted N, type &S'N.) and to get a period after the N, type &S'.. (you may have done this with Script variables).

When you script any file produced with a .im sherpa font command, you must specify YES to PROPORTIONAL on the Sherpa menu. What proportional means is "I am not using the Sherpa just like a line printer". If you say NO to PROPORTIONAL, Script ignores any .im sherpa font commands, and greeks, subscripts, and superscripts will be printed poorly, if at all.

Producing greeks makes it difficult to produce underscores. Thesis9 has been modified to underscore appendix, chapter, subsection, and fifthsub titles (as required by the registrar) when you are printing greeks with non-proportional fonts, as described above. To get UnderScores With GREEK, place the command

```
.sr uswgreek = yes
```

after you imbed thesis9. This will give unsatisfactory results with proportional printing. (This means, unfortunately, that it isn't possible to print an acceptable thesis in a proportional font. This will change soon.)

Uswgreek won't underscore the titles of publications in your references. The simplest solution is to print your reference pages (and any pages where you say .us) on a separate run, specifying NO to PROPORTIONAL on the Sherpa menu.

Superscripts in the second line of a two-line figure title look terrible. They run into the line above, since the title is printed single space. To get it printed double-space, put

```
.sr dsfig = yes
```

before the .figure command. Turn this off by putting .sr dsfig = no after the figure, as the registrar expects single-spaced titles for most circumstances.

As of this writing, Oct 85, it appears to be necessary to adjust Sherpa's top margin whenever specifying YES for PROPORTIONAL. Students are getting good results with thesis9 by specifying

```
tm 0.1
```

on the ----- line at the bottom of the SHERPA screen when you Script your file. Test with 3 or 4 pages to see if you find the results satisfactory.

The Sherpa technical memo explains how to get proportional print. Since more proportional characters will fit on a line, line breaks and page breaks will be different than on the line printer, and there is no way to preview the results at your terminal. Thus, it takes more time (and printouts) to fine-tune the appearance of your thesis when using proportional output. Some prefer the appearance of proportional output, but few will find it worth the extra effort.

There is an experimental formula processing system now available. It produces large summation characters, multiline brackets, smaller characters for subscripts and superscripts, overbar, dot, and tilde notation, and many more mathematical operators. However, its operation and interaction with Thesis9 requires considerable fine-tuning and experimentation, so it is suitable only for those willing to give it plenty of time. See Larry Frazier, IN-104 if interested.

E. TABLE AND FIGURE SAMPLES

Figure 4.4 and 4.5 are presented to help in setting up figures, and table III and IV for tables. Notice that while 60 lines of text are allowed in a figure, you must specify `.sp 61` to keep Script from placing a line of text below a figure you are keeping blank for pasting in material from elsewhere (as described in greater detail in chapter 3). Or you can simply use the `.fullblank` command (see index) to produce a full-page blank figure or table. Refer to the other tables and figures in this text for other examples.

TABLE IV

Normal Full Page Table

[illegible]

APPENDIX A
THESIS9 MACRO QUICK REFERENCE

This is a sample appendix. If you plan to put a program listing in your appendix, place the command

.sr appnside = yes

just before your .im appa9 (or whatever the name of your appendix file is) command in your driver9 file (since a program listing is longer than 60 characters per line). Place the command

.revert

after the sideways appendix(es). If it's a program listing, put the command

.fo no

right after the .appendix command in the appendix file.

LIST OF REFERENCES

1. NPS Technical Note VM-06, Script User's Guide for NPS, Naval Postgraduate School, CA, April 1984
2. NPS Technical Note VM-05, Introduction to the XEDIT Editor, Naval Postgraduate School, CA, July 1983
3. Thesis Manual, Naval Postgraduate School, CA, May, 1983
4. SYSPUB User's Guide, Department of Computing Services, University of Waterloo, Canada, October 1982

BIBLIOGRAPHY

Utle, Bruce, Waterloo SCRIPT Reference Manual, University of Waterloo, 1983.

Turabian, Kate L., A Manual for Writers of Term Papers, Theses, and Dissertations, The University of Chicago Press, 1973.

INITIAL DISTRIBUTION LIST

| | No. | Copies |
|--|-----|--------|
| 1. All NPS Students | | 1 |
| 2. Interested Faculty | | 1 |
| 3. Computer Center Personnel Naval Postgraduate School Monterey CA 93943 | | 1 |
| 4. Chairman, Computer Science Stanford University Palo Alto CA | | 1 |

An Explanation
of
THESIS9 and Its Use

David D. Carlsen
Captain, United States Army
B.S., Brigham Young University, 1975

This example of a thesis explains how to effectively use the THESIS9 thesis preparation package. This example includes an index to improve its usefulness as documentation. However, an index is not part of accepted thesis format. It is intended that the THESIS9 commands produce all requirements of the NPS Thesis Manual dated 5/85. In addition they provide some features that simplify thesis preparation. All headings, the table of contents, figures, tables and references are automatically numbered or lettered as required. Paragraphs within sections and subsections are indented as required. The format is suitable for unclassified theses only.

Master of Science in
Computer Science
December 1985

Advisor: N.F. Schneidewind
Department of Computer
Science

Classification of thesis:
Unclassified

Index

abstract ... 22
abstract (special) won't fit on one page ... 45
abstract does not fit on one page ... 19
acknowledgements ... 23
adding pages produced elsewhere ... 52
advisor's department different from chairman ... 47
ampersand in my output ... 15
and sign in my output ... 15
apostrophe
 in my equation ... 18
 in my title ... 18
appendices sideways ... 43

bibliography ... 43
blank figures ... 30
blank page (unwanted) ... 47
blank pages ... 52
blank tables ... 30
blanks at start of line: removing ... 51
blanks: Script inserts too many ... 37
box
 how to get one surrounding tables ... 29
 not wanted surrounding figures ... 34
boxes ... 40
boxes in a figure ... 35
brackets (square) for references ... 24

can't start a file ... 46
chairman ... 21
chairman serves as second reader ... 20
chairman's department different from advisor ... 47
changes in Thesis9 ... 13
chapter
 just one in the paper ... 54

- chapter's two-line title not working ... 23
- classification of thesis ... 22
- co-advisor line not wanted ... 20
- coadvisor ... 20
- correct words listed as errors by spelling checker ... 54
- dean ... 21
- dean's name ... 21
- degree should be upper/lower in special abstract ... 20
- degree symbol ... 37
- department head serves as second reader ... 20
- department name missing from special abstract ... 21
- department name too long ... 21
- department of advisor different from chairman ... 47
- disclaimer ... 22
- distribution list ... 44
- distribution: limited ... 19
- doublespace ... 45
- editions of Thesis9 ... 13
- empty figures ... 30
- empty tables ... 30
- eqn to be removed from equation citation ... 41
- equations ... 41
 - longer than one line ... 41
 - moved to follow table or figure ... 42
 - moved to following page ... 42
 - no "eqn" ... 41
 - with quotes inside ... 41
- figabr ... 35
- figure
 - should say Fig., not Figure ... 35
- figure (full-page)
 - unwanted blank page ... 31
- figure titles
 - period at end ... 35
 - three lines ... 34
 - two lines ... 34
- figure titles with three lines ... 34
- figure 2.1, 2.1a, not 2.1, 2.2 ... 35
- figure's two (or three) -line title not working ... 23

- figures
 - blank ... 30
 - blank page following ... 47
 - boxes within the figure ... 35
 - collapsed when I turned figbox off ... 34
 - error message: You didn't close 48
 - extending onto following page ... 47
 - footnoting the title ... 39
 - how to turn off surrounding box ... 34
 - line of text at bottom of page ... 47
 - lines longer than 54 characters ... 31
 - maximum length and width ... 30
 - sideways on the page ... 31
 - suddenly all messed up ... 34
 - two lines required before or after ... 46
- file starts with text in it ... 46
- first line of paragraph at bottom of page ... 49
- footnote
 - error message: You didn't close 48
- footnote a figure or table ... 39
- footnote problems ... 40
- formula processor ... 60
- Fortran programs in an appendix ... 43
- full-page figure
 - unwanted blank page ... 31
 - unwanted line of text at bottom ... 31
- full-page figures ... 30
- full-page tables ... 30
- Greek characters ... 58
- head of department serves as second reader ... 20
- heads: start a new page? ... 17
- hyphenation
 - turn it off ... 44
- hyphenation of last word ... 49
- if all else fails ... 53
- incrementing the page number ... 52
- indentation of paragraphs ... 18
- join doesn't work ... 52
- justification: turn it off ... 44
- keeping two or more lines together ... 49

- laser printer ... 55
- last line of paragraph
 at top of page ... 49
- last word hyphenated ... 49
- leaving blank page ... 52
- LEft command (Xedit) ... 34
- length of variable names ... 14
- limited distribution ... 19
- line of text at bottom of full-page figure ... 31
- lines (two) required before a figure or table ... 46
- lines can't be made longer ... 52
- lines of text
 two or more must be kept together ... 49
- linespacing ... 45
- list command ... 36
- listing file changes become upper case ... 53
- listing file: get a printout ... 53
- listings in the appendix ... 43
- load Xedit command (for long lines) ... 34
- long abstract
 adjust page numbering ... 19
- long department name ... 21
- long equations ... 41
- long lines impossible ... 52
- long lines: LOAD Xedit command ... 34

- mathematical symbols ... 58
- maximum length of variable names ... 14
- MEMO file ... 12

- name of dean ... 21
- name of department too long ... 21
- names to avoid ... 18
- new page ... 17
- news of Thesis9 ... 13
- no-break control word indicator ... 49
- number as a title ... 18
- numbers on tables: change to arabic ... 28

- page numbers
 - increase for long abstract ... 19
- pages
 - inserting several pages from somewhere else ... 52
- papers with one chapter ... 54
- paragraph indentation ... 18
- period
 - after a variable name ... 16
 - at end of figure title ... 35
- point command ... 36
- printing a listing file ... 53
- printing program listings ... 43
- printout without Script ... 53
- program listings ... 43
- program listings in the appendix ... 43
- quotes inside an equation ... 41
- ragged right: jumode off ... 44
- ref command ... 26
- reference is split between pages ... 50
- references ... 24
 - a simpler command ... 26
 - at the end of a sentence ... 26
 - referring to the entire paragraph ... 26
 - two or more at once ... 27
 - without numbers ... 27
- referring to two (or more) references at once ... 27
- removing blanks at start of several lines ... 51
- RiGht command (Xedit) ... 34
- right margin: make it not squared-off ... 44
- roman numerals on tables: arabic is wanted ... 28
- SAS graph not printing right ... 51
- Script just will not do what I want ... 53
- second reader ... 20
- second-reader line to be removed ... 20
- semi-colons in a title or equation ... 51
- sherpa printer ... 55
- short papers with Thesis9 ... 54
- sideways appendices ... 43

- sideways tables or figures ... 31
- single line on a page ... 49
- single quote
 - in my equation ... 18
 - in my title ... 18
- singlespace ... 45
- six lines per inch ... 18
- sixty-six lines per page ... 18
- special abstract ... 44
 - degree should be printed upper/lower case ... 20
 - department name missing ... 21
 - won't fit on one page ... 45
- special characters ... 37
- spelling checker lists correct words as errors ... 54
- square brackets for references ... 24
- square right margin: turn it off ... 44
- start of several lines has several unwanted blanks ... 51
- subscripts: laser printer only ... 58
- subsidiary figures: fig 2.1a, 2.1b ... 35
- superscripts
 - any character ... 58
 - example ... 41
 - lineprinter ... 38
- table titles
 - two-line ... 32
- table's two-line title not working ... 23
- tables ... 28
 - blank ... 30
 - blank page following ... 47
 - error message: You didn't close ... 48
 - extending onto following page ... 47
 - footnoting the title ... 39
 - how to get surrounding boxes ... 29
 - line of text at bottom of page ... 47
 - lines longer than 54 characters ... 31
 - longer than one page ... 32
 - maximum length and width ... 30
 - roman numerals changed to arabic numerals ... 28
 - sideways on the page ... 31
 - two lines required before or after ... 46
- tabs inside tables and figures ... 29
- tb command inside tables and figures ... 29
- three-line figure titles ... 34
- title (two-line) of figure, chapter, table, not working ... 23
- title consisting of a number ... 18

titles to avoid ... 18
translations ... 37
tried everything ... 53
two lines after (or before) a figure (or table) ... 46
two lines must be together ... 49
two or more references at once ... 27
two-line figure titles ... 34
two-line table titles ... 32
two-line title (figure, chapter, table) not working ... 23
two-page Tables ... 32

up-to-date with Thesis9 ... 13
upper case when I edit my listing file ... 53

variable ... 14
 at end of sentence ... 16
 name length ... 14
 names to avoid ... 15
 not substituted ... 15
VERIFY command in Xedit ... 34

words must be kept on one line ... 37

You didn't close a figure, or a table, or footnote ... 48

66 lines per page ... 18

```

.*
.* THERE ARE TWO SCREENS FULL OF COMMENTS AT THE BEGINNING OF THIS
.* FILE. Be SURE to read all of the comments!
.*
.* As time-consuming as it may be to read thesis9 documentation,
.* it's faster than figuring out what went wrong.
.*
.cm IF YOU HAVE NO BIBLIOGRAPHY **REMOVE** the lines, near the
.cm end of this file: .im biblio9 and .bibend
.cm (or you can comment out those lines)
.*****
.cm
.cm THIS FILE IS THE FILE YOU WILL NAME
.cm IN THE "SCRIPT FN (PAS 3" COMMAND.
.cm
.cm ***** IMBED THE FILE OF THESIS MACROS *****
.im thesis9
.cm ***** TYPE OF DISTRIBUTION *****
.cm 1 = approved for public release
.cm 2 - 6 correspond to B through F on the sheet
.cm from the registrar. They require the use of
.cm .reason and .dodoff as described in thesis9
.cm documentation.
.distno 1
.*reason
.* If NPS is the controlling office, use the following address.
.* Otherwise, change to the required address.
.dodoff Superintendent, Code 043, Naval Postgraduate School, Monterey CA 93943-5100
.cm ***** TITLE OF THESIS *****
.cm Use the title macro A MAXIMUM OF 3 TIMES.
.cm Each use will center the part of the title given.
.title An Explanation
.title of
.title THESIS9 and Its Use
.cm
.cm ***** NUMBER OF AUTHORS *****
.numauth 1
.cm ***** NAMES OF AUTHORS *****
.author1 David D. Carlsen
.cm ***** RANK OF AUTHORS *****
.rank1 Captain, United States Army
.cm ***** UNDERGRADUATE DEGREE OF AUTHORS *****
.cm Note- if author has 2 undergraduate degrees use .degree1a
.cm for the second. If there are two authors, use .degree2 for the
.cm second author, .degree2a for his second degree, etc.
.degree1 B.S., Brigham Young University, 1975
.cm ***** NPS DEGREE *****
.npsdeg Master of Science in Computer Science
.cm ***** MONTH AND YEAR OF GRADUATION *****
.date March 1984
.CM ***** THESIS ADVISOR *****
.advisor N.F. Schneidewind
.cm Delete the * from the coadvisor line, and erase the ".seconde"
.cm command if you want "Co-Advisor" instead of "Second Reader".
.seconde R.W. Hamming
.*coadvisor R.W. Hamming
.* Remove the * from the next line if you have no 2nd reader or coadvisor
.*sr secname = no
.CM ***** NPS DEPARTMENT AND CHAIRMAN *****
.chairman B.J. MacLennan
.dept Department of Computer Science
.CM ***** NPS DEAN AND NAME *****
.deaname Kneale T. Marshall
.dean Dean of Information and Policy Sciences
.cm ***** CLASSIFICATION OF THESIS *****
.class Unclassified
.cm Delete the * on the following line if your abstract won't
.cm fit on the front of the DD1473
.*ldpage 3
.titlepg ;.* Print title page
.* End of information macros. The rest of this driver consists of
.* Script imbed commands. Any of these can be ignored by typing '.cs on'
.* before the command and '.cs off' following the last ignored command.
.*
.* If you don't like periods at the end of the titles of your
.* figures, delete the asterisk (*) from the following line.

```

```

.*sr figperiod = no
.* PRINT ABSTRACT
.im abstract
.cm PRINT TABLE OF CONTENTS
.contents
.cm PRINT LIST OF TABLES
.listab
.cm PRINT LIST OF FIGURES
.lisfig
.* Remove * below to make equations print without "eqn"
.*sr eqnon = no
.* Remove * below to make table numbers "17" instead of "XVII"
.*tromnoff
.* Remove * below to get boxes around your tables
.*tabbox on
.cm ***** At this point you begin imbedding *****
.cm each of your chapters. The filetype of each file
.cm must be SCRIPT. Each file must start with
.cm '.chapter xxxxx' where xxxxx is the chapter title.
.im chap19
.im chap29
.im chap39
.im chap49
.cm ***** Imbed file containing text of references. *****
.im ref9
.cm ***** End of reference list *****
.refend
.cm ***** Imbed your appendixes at this point. *****
.cm Each appendix must start with '.appendix xxxxx'
.cm where xxxxx is the appendix title.
.im appa9
.cm PRINT THE LIST OF REFERENCES CREATED ABOVE
.lisref
.cm remove * in next three commands for bibliography
.cm PRINT TITLE OF BIBLIOGRAPHY PAGE
.*lisbib
.cm ***** Imbed a file containing the text of your bibliography.
.*im biblio9
.cm Note that biblio file must begin with .fo yes and
.cm end with .fo no (see BIBLIO9 example file)
.*bibend
.cm PRINT TITLE OF DISTRIBUTION PAGE
.lisdis
.cm ***** IMBED DISTRIBUTION LIST *****
.im dist9
.cm END OF DISTRIBUTION PAGE
.disend
.cm PRINTS SPECIAL ABSTRACT PAGE
.cm This macro executes a ".im abstract", so you must have a file
.cm "abstract script" - the first line of the file must be
.cm ".prelim Abstract" which is used to print the abstract at the
.cm beginning. The text of the abstract should start on line 2.
.*special

```



```
.chapter SCRIPT and THESIS9
.section Using SCRIPT
.subsect Seeing Your Results
.para As described in
.refcom &scrusgd
the best way to see how your thesis is developing is to type
.sk;.il 11;script driver9 (memo pas 3
.ix 'MEMO file'
.sk;This will give you a file called DRIVER9 MEMO containing a
copy of your thesis very much as it would appear on paper.
.para
To get a copy of your file on paper, type:
.sk;.il 11;script driver9 (print pas 3
.sk c
.para To see what a single chapter will look like (CHAP1 for example),
.us |place the command |.im thesis9| on line one of the file CHAP1 SCRIPT
and then type
.sk;.il 11;script chap1 (memo pas 3
.sk c
.para Of course, you can simply type SCRIPT and follow
the menu that appears on the screen, instead of typing out the
commands shown above.
See
.refblk &scrusgd
for more information on the general use of Script.
.subsect Typing Your Thesis
.para The best way to type in the text of your thesis is to use
the Power mode of Xedit. Input mode is useful for typing in the
material for a table or a figure when you want to lay out
the exact placing of material on the page. See
.refblk &xed
for more information on the use of Xedit.
Incidentally, be sure not to routinely type the pound sign (above 3 on
the keyboard) each time you enter power typing. You'll get an extra
blank line each time you do.
.section Getting Started With Thesis9
.para When you type LINKSCR THESIS9, a file called DRIVER9 SCRIPT
is sent to your disk. It contains
the commands needed to correctly format your title page. The commands
are in the form used to produce the title page of this documentation,
using name, degree, etc., appropriate to one of the people who
contributed to this documentation. You will be editing the DRIVER9
file to replace that name, degree, etc., with your own.
.para The DRIVER9 file also
calls in system copies of chapters which were formatted to produce this
documentation. You can call your own chapters CHAP19, CHAP29, etc., if
you like, and then Script will find your copies instead of the system
copies. Or, you can give your files whatever name you choose, and find
the spot in DRIVER9 that says
.us .li .im chap19| etc. and change those lines
to imbed your own files. Similarly, you will create a file called
ABSTRACT SCRIPT, a file containing your references, and so forth.
Then, when you
type SCRIPT DRIVER9 (MEMO PAS 3 you will get a file called DRIVER9
MEMO containing as much of your thesis as you have completed.
.section Keeping Up to Date with Thesis9
.ix 'news of Thesis9'
.ix 'changes in Thesis9'
.ix 'up-to-date with Thesis9'
.ix 'editions of Thesis9'
.para From time to time, students tell the Script consultant of ways in
which Thesis9 is inconvenient, incomplete, or inflexible. As time
permits, the consultant modifies and adds to Thesis9 in response.
Thesis9 documentation is updated from time to time
to reflect these changes.
.para However, it is
.US NOT
necessary to get a new copy of the documentation each time a new issue
comes out. The most useful documentation is that which you have read
and underlined and annotated. Further, Thesis9 documentation
is being consumed at a higher rate than Script (or any other)
documentation, and if this continues, the print shop will no longer
print it locally, and it will be necessary to have it printed in
Oakland, with a lead time of two months.
The resulting staleness of information will do no one any good.
.para To stay up to date, type LINKSCR NEWS every month or so. In
```


addition, there is a 6 or 8 page synopsis of what's new with Thesis9 available outside In-104, called What's New With Thesis9.

A new issue of What's New is produced every 4 or 5 months.

.section General setup of thesis9 files

.para It is convenient and customary (though not required) to set up chapters and appendixes as separate files (e.g., "TC2 SCRIPT", for thesis chapter 2).

Although the text of a reference can be placed within your text, some find it easier to put them in a separate file, also (see REF9 SCRIPT). This example thesis has been organized that way.

Chapter three describes how to refer to these references in your thesis.

.para Paragraph indentation following head divisions (chapters, sections, etc.) is not automatic. Since current NPS thesis format requires

these indentations, you must start each chapter, section, etc.,

.us |with the |.para| command

(immediately after the .chapter or .section or whatever).

.section SCRIPT Variables

.ix 'variable'

.para In your thesis you are likely to say things like "see figure 4.3".

You are also likely to add or remove figures, so that what was

figure 4.3 is now 4.4 or 4.2. Updating all the references to figures, tables, and sections is time-consuming and error-prone.

If you look at the file called

CHAP29 SCRIPT (at the end of this documentation),

you will see that the reference to figure &caution

is not a number, but &\$caution.

The word "caution" appears directly after the .figure command word,

and references to the figure give the same word preceded by an &.

By referring to a figure by name, you leave it to Script to keep

the numbers straight as you revise your thesis.

.figure caution 'Caution on Selection of Variables'

. * The .figure command turns .fo off, but I want it on.

.fo yes

Be sure the variable name you give

each table, figure, or reference is different than the variable name

for any other table, figure, equation, or reference.

.figend

.ix 'variable' 'name length'

.ix 'length of variable names'

.ix 'maximum length of variable names'

. * NOTE: Thesis format prohibits the use of an index

.para Variable names can be up to 10 characters long.

To avoid possible problems,

don't use the names of THESIS9 or SYSPUB commands as variable names.

.ix 'variable' 'names to avoid'

Script commands are also dangerous. For example, using ll (as in "line length") as a variable

is a known hazard: it resets the line length of your whole thesis to a ridiculous number.

THESIS9 itself uses variables which you can not easily see.

Generally they end with the two

characters "_@", so don't use variable names with this ending.

"Layout" is another variable you can't use.

.para SCRIPT differentiates between the

.us name| of a variable and the |value

of the variable this way: if you are referring to the name,

simply use the name; if you are referring to the variable's

.us value|, then precede the name with an ampersand (&). For example,

the value of the variable called "STAT" is referred to by "&STAT".

You would normally use the name of the variable only within the command

that begins a figure, table, or equation. Elsewhere, when referring

to the table in your paper, precede the name with an

.hy off

.footnote ampersand.

An ampersand is shifted "7" on the terminal in widest

use at NPS.

.footend

. * NOTE: Thesis format prohibits the use of an index

.para If you don't

.ix 'ampersand in my output'

.ix 'and sign in my output'

.ix 'variable' 'not substituted'

specify "(pas 3" when SCRIPTing the file, your output will show

&varname (or whatever variable you have chosen)

for those variables you use before the figure they refer to.

The .figure (or .table or .equation) command assigns a value to the

FILE: CHAP29 SCRIPT A1

variable. When you specify (pas 3, Script reads through the entire file three times, assigning values to all variables on the first pass, and then substituting them in on the second pass. This allows you to say something like "see figure &somevar below."

.para Notice that SCRIPT, always hoggish of cpu time, runs three times slower when you specify the (pas 3 option as described above. Actually, you needn't use (pas 3 most of the time: if you don't, you simply get &var instead of the number you expected. This can make a difference in line breaks in some cases, since the variable name is a little longer than the number value.

.ix 'variable' 'at end of sentence'

.ix 'period' 'after a variable name'

.para If you choose to end a sentence with a reference to a variable name, you must end the variable name with two periods in order to make one period print. Example: "as shown in figure &variable.." will print out "as shown in figure 2.2." To get a comma after a variable, type &variab., in your Script file.

FILE: ABSTRACT SCRIPT A1

.prelim Abstract

* this is used by thesis9

.para

This example of a thesis explains how to effectively use the THESIS9 thesis preparation package. This example includes an index to improve its usefulness as documentation. However, an index is .us not| part of accepted thesis format. It is intended that the THESIS9 commands produce all requirements of the NPS Thesis Manual dated 5/85. In addition they provide some features that simplify thesis preparation. All headings, the table of contents, figures, tables and references are automatically numbered or lettered as required. Paragraphs within sections and subsections are indented as required. The format is suitable for unclassified theses only.

.appendix THESIS9 Macro Quick Reference

.ls 1

.para

This is a sample appendix. If you plan to put a program listing in your appendix, place the command .sk;.il 11; .sr appnside = yes .sk;just before your .im appa9 (or whatever the name of your appendix file is) command in your driver9 file (since a program listing is longer than 60 characters per line). Place the command .sk;.il 11; .revert .sk;after the sideways appendix(es). If it's a program listing, put the command .sk;.il 11; .fo no .sk;right after the .appendix command in the appendix file.

FILE: REF9 SCRIPT A1

```
.reftext scrusgd
.us |NPS Technical Note VM-06, |Script User's Guide for NPS,
Naval Postgraduate School, CA, April 1984
.refend
.reftext xed
.us |NPS Technical Note VM-05, |Introduction to the XEDIT Editor,
Naval Postgraduate School, CA, July 1983
.refend
.reftext thesman
.us Thesis Manual|, Naval Postgraduate School, CA, May, 1983
.refend
.reftext syspb
.us SYSPUB User's Guide,| Department of Computing Services,
University of Waterloo, Canada, October 1982
```

FILE: BIBLIO9 SCRIPT A1

```
.cm Must turn formatting on, else biblio prints out just as you
.cm typed it in.
.fo yes
Utle, Bruce,
.us Waterloo SCRIPT Reference Manual,
University of Waterloo, 1983.
.sk
Turabian, Kate L.,
.us A Manual for Writers of Term Papers, Theses, and Dissertations,
The University of Chicago Press, 1973.
.fo no
.cm Turn formatting off again, since that's how it was when
.cm we entered this file.
.cm
.cm ".bibend" appears in driver9
```

FILE: DIST9 SCRIPT A1

```
1.-All NPS Students~1
.sk
.cm ***** These "skip" commands are required! *****
2.-Interested Faculty~1
.sk
3.-Computer Center Personnel~1
~-Naval Postgraduate School
~-Monterey CA 93943
.sk
4.-Chairman, Computer Science~1
~-Stanford University
~-Palo Alto CA
```